

DIRECTORY FREE MULTINODE COMPUTER SYSTEM**ABSTRACT OF THE DISCLOSURE**

A multinode, multiprocessor computer system with distributed shared memory has reduced hardware and improved performance by providing a directory free environment. Without a directory, nodes do not track where cache lines are stored in caches on other nodes. In two-node systems, cache lines are implied to be either on the local node or cached at the remote node or both. Thus, if a local node has a cache miss it is implied that the other node in the system has the cache line. In another aspect, the system allows for "silent rollouts." In prior distributed memory multiprocessor systems, when a remote node has capacity limitations, it must overwrite (i.e., rollout) a cache line and report to the home node that the rollout occurred. However, the described system allows the remote node to rollout a cache line without reporting to the home node that the rollout occurred. Such a silent rollout can create timing problems because the home node still believes the remote node has a shared copy of the cache line. To solve the timing problems and ensure forward progress, if the remote node requests a cache line and receives an invalidate message, it issues a request for an exclusive copy of the cache line. By requesting an exclusive copy, the remote node is guaranteed to obtain the desired cache line and forward progress is achieved.